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# SNOW SURVEY and WATER SUPPLY FORECASTS for COLORADO and NEW MEXICO

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE and

COLORADO AGRICULTURAL EXPERIMENT STATION, STATE ENGINEER of COLORADO and STATE ENGINEER of NEW MEXICO

Data included in this report were obtained by the agencies named above in cooperation with the Bureau of Reclamation, U.S. Forest Service, National Park Service and other Federal, State, and private organizations.

MAR. 1, 1961

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#### UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Cooperative Snow Survey and Water Supply Forecast Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, 30 does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

#### PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
COLORAGO AND STATE OF UTAH	MONTHLY (JANMAY)	. SALT LAKE CITY, UTAH	UTAH STATE ENGINEER AND OTHER AGENCIES
COLUMBIA	MONTHLY (JANMAY)	BOISE. IOAHO	. IOAHO STATE RECLAMATION ENGINEER
UPPER MISSOURI AND STATEOF MONTANA	MONTHLY (FEBMAY)	BOZEMAN MONTANA	MONT. AGR. EXP. STATION
WEST-WICE	OCT. 1. APR. 1. MAY 1_	PORTLANO, OREGON	ALL COOPERATORS
STATES			
ALASKA	MONTHLY (MARMAY)	PALMER, ALASKA	ALASKA S.C.D.
AR I ZON A	SEMI-MONTHLY (JAN.15 - APR.1)		SALT R. VALLEY WATER USERS ASSOCATION
COLORADO ANO NEW MEXICO	MONTHLY (FEBMAY)	FORT COLLINS, COLORAGO	COLO. AGR. EXP. STATION COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IOAHO	MONTHLY (FEBMAY)	BOISE, IOAHO	. IOAHO STATE RECLAMATION ENGINEER
NEVA O A	MONTHLY (FE8APR.)	RENO, NEVAOA	NEVAGA DEPT. OF CONSERVATION AND NATURAL RESOURCES DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JANMAY)	PORTLANO, OREGON	ORE. AGR. EXP. STATION OREGON STATE ENGINEER
WASHINGTON-	MONTHLY (FERMAY)	SPOKANE, WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEB. JUNE)	. CASPER, WYOMING	. WYOMING STATE ENGINEER
Copies of these various repor	rts may be secured from:	Head, Water Supply Forec Soil Conservation Servic 209 S. W. Fifth Ave., Po	e.
	PUBLISHED BY	OTHER AGENCIES	
REPORTS	ISSUED		AGENCY
BRITISH COLUMBIA	MONTHLY (FEBJUNE)		RIGHTS BR., DEPT. OF LANOS AND T BLOG., VICTORIA, B.C., CANADA

CALIFORNIA \_\_\_\_

MONTHLY (FEB.-MAY) \_\_\_\_\_\_ CALIF. DEPT. OF WATER RESOURCES. SACRAMENTO, CALIF.

#### FEDERAL-STATE COOPERATIVE

#### SNOW SURVEYS AND WATER SUPPLY FORECASTS

for

COLORADO RIVER, PLATTE RIVER ARKANSAS RIVER AND RIO GRANDE DRAINAGE BASINS

Issued

March 1, 1961

Report Prepared By
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General Series Paper No. 739 Colorado Agricultural Experiment Station

#### AS OF

#### MARCH 1, 1961

#### SNOW COVER

SNOW PACK OVER THE TWO STATE AREA IS STILL MUCH BELOW NORMAL. THE SAME PATTERN EXISTS IN THE TWO STATE AREA, WITH LOW SNOWS NOT TOO BAD, BUT HIGH ELEVATION SNOWS MUCH BELOW NORMAL. IF THIS PATTERN CONTINUES FOR THE NEXT TWO MONTHS WE CAN EXPECT AN EARLY RUNOFF. THE RUNOFF PERIOD WILL PROBABLY BE SHORT.

THE BEST SNOW COVER AT THIS TIME EXISTS ON THE RIO GRANDE BASIN IN NEW MEXICO WHILE ITS SISTER AREA, THE UPPER RIO GRANDE IN COLORADO, IS ONE OF THE POOREST AREAS. THE REST OF COLORADO RANGES FROM 55% TO 70% OF NORMAL SNOW COVER.

#### SOIL MOISTURE

SOIL MOISTURE AS OF THE FALL READING WAS POOR IN MOST OF THE TWO STATE AREA. HEADWATERS OF THE RIO GRANDE IN COLORADO WAS A LITTLE BIT BETTER THAN NORMAL. DURING THE MONTH OF FEBRUARY, SOME AREAS EXPERIENCED UNSEASONABLY HIGH TEMPERATURES WHICH MAY HAVE MELTED THE LOW ELEVATION SNOWS. THIS COULD HELP THE SITUATION TO SOME EXTENT. THE VALLEYS HAVE BEEN REPORTING FAIR TO POOR CONDITIONS. ONE GOOD GENERAL STORM COULD CHANGE THIS PICTURE.

#### RESERVOIR STORAGE

STORAGE GENERALLY IS SIMILAR TO LAST YEAR AT THIS TIME. CARRYOVER STORAGE ON THE BIG THOMPSON PROJECT IS SLIGHTLY BETTER THAN LAST YEAR. REPORTS FROM THE MIDDLE AND LOWER RIO GRANDE BASIN IN NEW MEXICO INDICATE CONSIDERABLY LESS THAN NORMAL CARRYOVER STORAGE.

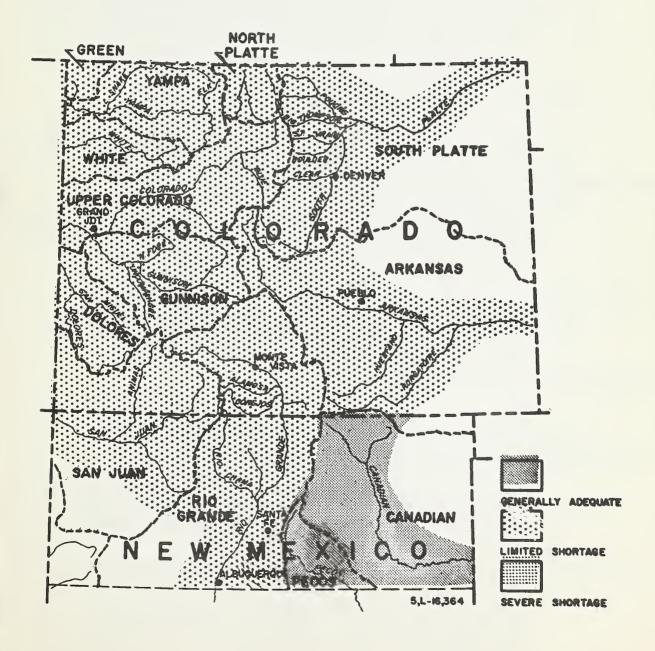
THE ONE BRIGHT SPOT IN THE TWO STATE AREA IS THE CANADIAN AND PECOS DRAINAGES. RESERVOIRS IN THIS AREA ARE FULL AND RUNNING OVER.

#### STREAMFLOW

STREAMFLOW WILL BE BELOW NORMAL IN BOTH STATES. WATER USERS THAT DO NOT HAVE SUPPLEMENTAL STORAGE OR THAT ARE NOT BELOW RESERVOIRS WILL EXPERIENCE SHORTAGES. UNLESS THE SNOW FALL IN THE NEXT TWO MONTHS IS EXTREMELY HEAVY, SOME OF THESE SHORTAGES COULD BE CRITICAL.

#### WATER SUPPLY OUTLOOK

THE MAP ON THIS PAGE INDICATES THE MOST PROBABLE WATER SUPPLY AS OF THE DATE OF THIS REPORT. ESTIMATES ASSUME AVERAGE CONDITIONS OF SNOW FALL, PRECIPITATION AND OTHER FACTORS FROM THIS DATE TO THE END OF THE FORECAST PERIOD. AS THE SEASON PROGRESSES ACCURACY OF ESTIMATES IMPROVE. IN ADDITION TO EXPECTED STREAMFLOW, RESERVOIR STORAGE, SOIL MOISTURE IN IRRIGATED AREAS, AND OTHER FACTORS ARE CONSIDERED IN ESTIMATING WATER SUPPLY. ESTIMATES APPLY TO IRRIGATED AREAS ALONG THE MAIN STREAMS AND MAY NOT INDICATE CONDITIONS ON SMALL TRIBUTARIES.



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#### WATER SUPPLY OUTLOOK BY MAJOR WATERSHED AREAS

#### WATERSHED 1 - SOUTH PLATTE RIVER WATERSHED

Describes water supply conditions in Fort Collins, Big Thompson, Longmont, Boulder Valley, Jefferson, Teller-Park, West Plum, Cherry Creek, Kiowa, West Arapahoe, West Adams, East Adams, Platte Valley, Southeast Weld, and West Greeley Soil Conservation Districts.

#### WATERSHED 2 - ARKANSAS RIVER WATERSHED

Describes water supply conditions in Lake County, Upper Arkansas, Fremont, Custer County Divide, Fountain Valley, Black Squirrel, Horse-Rush Creek, Central Colorado, Turkey Creek, Pueblo, Bessemer, Olney Boone, Cheyenne, Upper Huerfano, Stonewall, Spanish Peaks, Purgatoire, Branson Trinchera, Western Baca County, Southeastern Baca County, Two Buttes, Bent, Timpas, Northeast Prowers, Prowers, West Otero and East Otero Soil Conservation Districts.

#### WATERSHED 3 - RIO GRANDE RIVER WATERSHED (COLORADO)

Describes water supply conditions in Rio Grande, Center, Mosca, Hooper, Mt. Blanca, and Sanchez Soil Conservation Districts.

#### WATERSHED 4 - RIO GRANDE RIVER WATERSHED (NEW MEXICO)

Describes water supply conditions in Lower Cebolla, Abiquiu-Vallecitos, Eastern Taos, Lindrith, Coyote-Canones, Espanola Valley, Pojoaque, Jemez, Santa Fe-Sandoval, Tijeras, Cuba, and Edgewood Soil Conservation Districts.

#### WATERSHED 5 - DOLORES, SAN JUAN, AND ANIMAS RIVERS WATERSHED

Describes water supply conditions in San Miguel Basin, Dove Creek, Dolores, Mancos, LaPlata, Pine River, and San Juan Soil Conservation Districts.

#### WATERSHED 6 - GUNNISON RIVER WATERSHED

Describes water supply conditions in Delta, Gunnison, Cimarron, Shavano, and Uncompandere Soil Conservation Districts.

#### WATERSHED 7 - COLORADO RIVER WATERSHED

Describes water supply conditions in DeBeque, Lower Grand Valley, Bookcliff, Rifle Silt, Eagle County, Middle Park, Glade Park, Upper Grand Valley, Plateau Valley, South Side, and Mt. Sopris Soil Conservation Districts.

#### WATERSHED 8 - YAMPA, WHITE AND NORTH PLATTE RIVERS WATERSHED

Describes water supply conditions in Yampa, Moffat, West Routt, East Routt, North Park, Upper White River, Lower White River, and Douglas Creek Soil Conservation Districts.

### SOUTH PLATTE RIVER WATERSHED IN COLORADO

as of MARCH 1, 1961

#### U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

#### SNOW COVER

SNOW COVER OVER THE ENTIRE SOUTH PLATTE BASIN WAS 61% OF THE AVERAGE FOR THIS DATE. SNOW DOES NOT VARY MUCH FOR ANY PARTICULAR BASIN, BUT THE BOULDER RIVER SEEMS TO BE SLIGHTLY BETTER THAN THE REST. THE STORM THAT HIT DURING THE LATTER PART OF FEBRUARY HELPED CONSIDERABLY. MANY MORE STORMS WILL BE NEEDED TO ASSURE ADEQUATE WATER FOR THE SUMMER MONTHS.

#### SOIL MOISTURE

FALL READING OF MOUNTAIN SOIL MOISTURE STATIONS INDICATED EXTREMELY POOR SOIL MOISTURE, HOWEVER, THIS SITUATION COULD HAVE IMPROVED DURING THE LAST MONTH.

HEAVY SNOW MELT WAS EVIDENT AS HIGH AS THE 8600 ELEVATION LEVEL. THIS IS VERY UNUSUAL DURING FEBRUARY. THE MELTING SNOW WILL INCREASE THE SOIL MOISTURE. MOST VALLEY AREAS ARE REPORTING FAIR TO GOOD SOIL MOISTURE. PRECIPITATION DURING THE EARLY FALL MONTH WAS GOOD OVER THE PLAINS AREA. THE FOOTHILLS REGION HAS POOR TO FAIR SOIL MOISTURE.

#### RESERVOIR STORAGE

OVERALL STORAGE ON THE SOUTH PLATTE IS SLIGHTLY BETTER THAN NORMAL, BUT NOT AS GOOD AS LAST YEAR. STORAGE IN THE BIG THOMPSON PROJECT IS A LITTLE BETTER THAN LAST YEAR AND CONSIDERABLY ABOVE AVERAGE. THIS STORAGE WILL HELP REDUCE THE SHORTAGE EXPECTED FROM STREAMFLOW RUNOFF.

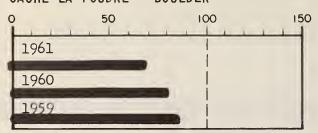
#### STREAMFLOW

STREAMFLOW IS EXPECTED TO BE AROUND 70% FOR THE BASIN. THE MAJOR TRIBUTARIES VARY FROM 62% ON THE ST. VRAIN TO 78% ON BOULDER CREEK. DOWN STREAM SHORTAGES WILL EXIST UNLESS THE NEXT TWO MONTHS PRODUCE A MUCH HIGHER THAN NORMAL SNOW FALL.

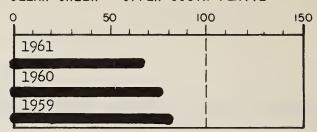
AVERAGE WATER CONTENT IS COMPUTED ON 15-YEAR BASIS (1943-57). ALL YEARS OF RECORD ARE USED WHEN A SNOW COURSE HAS LESS THAN 15 YEARS OF RECORD.

THIS REPORT COMPILED IN COOPERATION WITH COLORADO EXPERIMENT STATION AND STATE ENGINEER OF COLORADO.

#### CACHE LA POUDRE - BOULDER



#### CLEAR CREEK - UPPER SOUTH PLATTE



#### RESERVOIR STORAGE (1,000 AC. FT.)

#### SOIL MOISTURE

RESERVOIR	USABLE CAPACITY	THIS YEAR	LAST YEAR	AVERAGE	STATION	CAPACITY (INCHES)	THIS YEAR	LAST YEAR	AVERAGE
Horsetooth**	143.5	98.8	98.0	90.2	Feather	6.0	0.0	4.5	1.1
Windsor	18.6	•	11.9	8.5	Laramie Road	7.0	0.8	5.3	2.2
Cache LaPoudre	9.5	5.3	8.4	6.4	Beaver Dam	6.0	0.7	4.6	1.3
Fossil Creek	11.6	7.6	8.5	6.6	Two Mile	8.0	0.5	5.0	3.0
Halligan	6.4	3.4	4.5	1.9	Guard Station	7.0	0.7	2.2	1.1
Chambers Lake	8.8	1.7	3.1	1.7	Alpine Camp	7.0	0.5	5.8	1.5
Cobb Lake	34.3	12.8	18.7	5.5	Hoop Creek	6.0	0.5	4.4	2.0
Black Hollow	8.0		3.9	3.2	Alma	7.0	0.9	5.0	2.2
Carter Lake**	108.9		73.6	63.7	Kenosha Pass	7.0	0.4	2.8	2.1
Lake Loveland	14.3	7.7	9.6	5.2					
Boyd Lake	44.0	34.6	37.1	18.1	* All past da	ta			
Lone Tree	9.2	5.0	7.6	5.6					
Mariano	5.4	4.0	5.1	2.2	1				
Union	12.7	8.5	11.6	6.7					
Eleven Mile	81.9		97.8	69.2		LL PROFIL	I CC 4 EEET	1	' '
Cheeseman	79.0	59.7	60.5	47.6	AI	LL PROFIL	ES 4 FEEI	DEEP	
Marston	18.9		15.5	14.2					
Antero	33.0	15.5	15.7	14.2					
Gross***	43.1	17.4	23.1	-					
Milton	24.4		14.7	9.7					
Standley	18.5		15.3	10.0					
Marshall	10.3		5.9	1.6					
Terry Lake	8.2	4.2	5.9	4.3					

MEASURED FIRST OF MONTH

\* 15 yr. Avg. 1943-57 \*\* Less than 15 years

Less than 15 years
PRECIPITATION

STATION	AVE.	FALL WINTER DEP. AVE. I		DEP.
So. Platte	3.11.	1.13	1.24	- 26

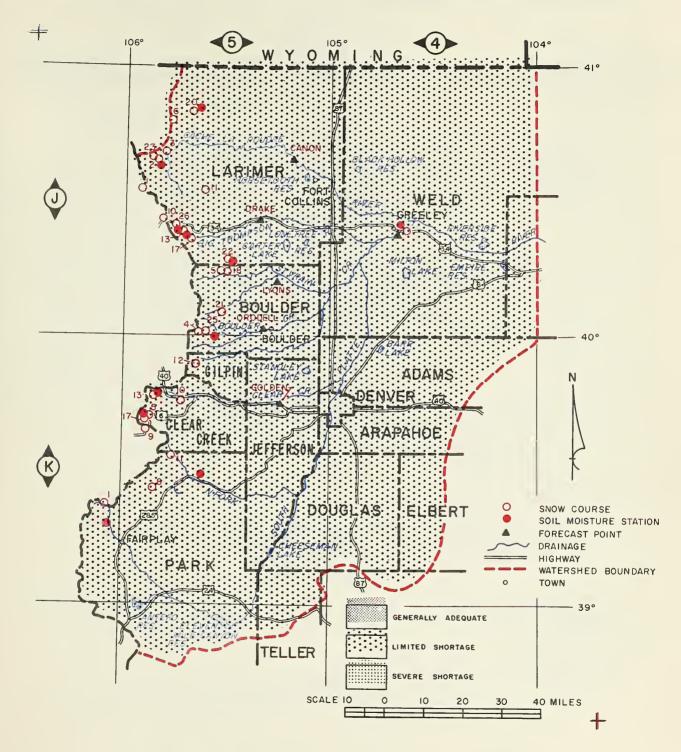
PRELIMINARY U.S. WEATHER BUREAU DATA AVERAGE OF SELECTED STATIONS

#### STREAMFLOW FORECAST (1,000 A.F.)

STREAM AND STATION	FORECAST	THIS YEAR % AVERAGE	15 YEAR AVERAGE 1943-57
Cache La Poudre at Canon(1	1) 12 <b>5</b>	66	189
Big Thompson at Drake (2)	80	75	106
Saint Vrain at Lyons	52	62	84
Boulder at Orodell	43	78	55
Clear Creek at Golden (3)	90	66	137

- Observed flow minus diversions from Michigan, Colorado and Laramie rivers, plus diversions for irrigation and municipal use above station.
- (2) Observed flow plus by-pass to power plants.
- (3) Observed flow minus diversions through Jones Tunnel.

### SOUTH PLATTE RIVER WATERSHED IN COLORADO





SNOW		CURRE	NT INFORMA	TION	PA	ST RECORD	
SNOW COURSE	NO.	DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	WATER C (INCHE LAST YEAR		YEARS OF RECORD
SOUTH PLATTE RIVER and TRIBUTARIES Cameron Pass (a) Chambers Lake Big South Wild Basin Loveland Pass Hoosier Pass Lake Irene Deadman Hill (a) Hour Glass Lake University Camp Jefferson Creek Hidden Valley Grizzly Peak * Red Feather Deer Ridge Copeland Lake Empire Geneva Park Ward Lost Lake Long's Peak Boulder Falls Berthoud Falls Two Mile Loveland Lift No. 1 Baltimore Pine Creek  * On adjacent drainage NS No survey (a) Air observed	5J1 5J2 5J3 5J5 5K5 6K1 5J10 5J6 5J11 5J8 5K8 5J13 5K9 5J17 5J18 5K10 5K11 5J21 5J22 5J25 5K13 5J26 5K24 5K23 5J31	2/27 2/26 2/26 2/25 2/27 Est. 2/27 2/27 2/26 2/27 2/26 2/27 2/28 2/27 2/28 2/27 2/28 2/25 2/25 2/25 2/25 2/25 2/25 2/25	63 19 5 34 33 36 48 17 45 25 34 25 10 22 31 36 39 39 49 24 8	14.8 4.1 5.8 10	18.0 7.0 2.5 10.8 11.8 11.1 NS 14.0 3.7 14.2 6.5 7.9 14.9 4.2 2.3 2.6 4.7 3.4 3.8 8.1 8.6 7.8 11.6	18.0 7.0 2.2 11.9 12.5 10.0 18.6 12.2 6.6 17.7 7.5 9.4 14.9 6.7 4.7 6.3 4.0 5.6 11.1 9.9 9.5 12.6 12.1	24 24 23 23 24 20 23 20 20 19 11 12 12 11 11 9 10 7

This Report Prepared by
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UNITED STATES

#### DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Snow Survey Colorado State University Ft. Collins, Colorado

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### ARKANSAS RIVER WATERSHED IN COLORADO

**as** of MARCH 1, 1961

#### U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

#### SNOW COVER

THE SNOW PACK OVER THE ARKANSAS BASIN RANGES FROM 80% OF THE 15-YEAR AVERAGE (1943-57) TO 65% ON THE HEADWATERS. THE PROSPECTS FOR AN ADEQUATE WATER SUPPLY FOR AGRICULTURAL USE THIS SUMMER ARE NOT OPTIMISTIC. IF THE NEXT MONTH AND A HALF PRODUCE MUCH ABOVE AVERAGE SNOW FALL WE COULD EXPECT THE WATER SUPPLY OUTLOOK TO IMPROVE.

#### SOIL MOISTURE

SOIL MOISTURE CONDITIONS AT THE HIGH ELEVATIONS IS GENERALLY 50% OF NORMAL WITH THE ONE EXCEPTION, LAVETA PASS AREA, WHICH IS ABOVE NORMAL. VALLEY AND MEDIUM ELEVATION SOILS RANGE FROM 90% TO 100% OF NORMAL. THIS CONDITION WILL TEND TO REDUCE THE WATER SUPPLY OUTLOOK THIS SEASON.

#### RESERVOIR STORAGE

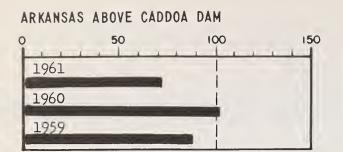
CARRYOVER STORAGE IN THE VALLEY RESERVOIRS IS MUCH BELOW NORMAL. JOHN MARTIN RESERVOIR CONTAINS ONLY 29% OF NORMAL STORAGE. OTHER RESERVOIRS ARE SIMILAR AND SLIGHTLY BELOW LAST YEAR.

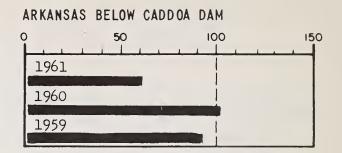
#### STREAMFLOW

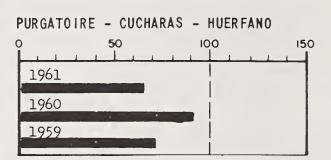
RUNOFF ON THE MAIN STEM OF THE ARKANSAS RIVER WILL RANGE 68% TO 72% OF NORMAL THIS YEAR. THE TRIBUTARY STREAMS RANGE FROM 50% OF AVERAGE ON THE PURGATOIRE TO 78% ON THE CUCHARAS.

AVERAGE WATER CONTENT IS COMPUTED ON 15-YEAR BASIS (1943-57). ALL YEARS OF RECORD ARE USED WHEN A SNOW COURSE HAS LESS THAN 15 YEARS OF RECORD.

THIS REPORT COMPILED IN COOPERATION WITH COLORADO EXPERIMENT STATION AND STATE ENGINEER OF COLORADO.







#### RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIR	USABLE CAPACITY	THIS YEAR	LAST YEAR	AVERAGE
Twin Lakes Sugar Loaf Clear Creek Meredith Horse Creek Adobe Creek Cucharas John Martin Model Great Plains * 15 yr. Avg.	57.9 17.4 11.4 41.9 26.9 61.6 40.0 366.6 15.0	9.3  6.0 0 0 1.8 15.5 4.3 20.9	10.7 3.2 8.2 - 0 0 1.2 20.9 3.4 55.4	22.9 7.7 5.0 14.3 7.4 21.6 4.7 52.6 2.5

#### PRECIPITATION

STATION	FA	FALL * WINTER		TER
STATION	AVE.	D: -,	Dec.	Jan.
Arkansas	4.76	.08	1.16	18

PRELIMINARY U.S. WEATHER BUREAU DATA AVERAGE OF SELECTED STATIONS

MEASURED FIRST OF MONTH

#### SOIL MOISTURE

STATION	CAPACITY	THIS	LAST	AVERAGE
	(INCHES)	YEAR	YEAR	*
Leadville Twin Lakes Garfield King LaVeta Pass *All past data	7.0 6.0 7.0 8.0 8.0	0.6 1.6 3.4 2.6 7.2	1.0 4.0 4.8 5.9 2.8	1.1 3.7 4.3 6.1 3.1

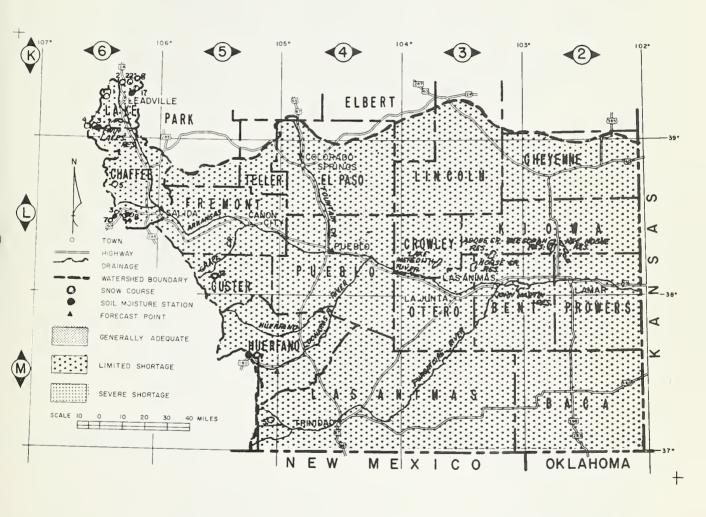
STREAMFLOW FORECAST (1000 A.F.

STREAM AND STATION	FORECAST	THIS YEAR % AVERAGE	15 YEAR AVERAGE 1943-57
Arkansas at Salida (1)	237	70	339
Arkansas at Pueblo (1)	242	71	342
Cucharas nr LaVeta	11	78	14
Purgatoire at Trinidad	26	50	52

(1) Observed flow plus change in storage in Clear Creek, Twin Lakes, and Sugar Loaf Reservoirs minus diversions through Busk-Ivanhoe and Twin Lake Tunnels and Ewing, Fremont Pass, Wurtz and Columbine Ditches.

ALL PROFILES 4 FEET DEEP

### ARKANSAS RIVER WATERSHED IN COLORADO





SNOW	1	CURRE	NT INFORMA	TION	PA	ST RECORD	
SNOW COURSE	NO.	DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	WATER CONTENT (INCHES) LAST YEAR AVERAGE		YEARS OF RECORD
			(inches)	(111011120)	LAST YEAR	AVERAGE	KZCOKD
ARKANSAS RIVER							
Tennessee Pass	6K2	2/28	28	4.8	9.1	7.9	25
Twin Lakes Tunnel	6K3	2/26	21	4.3	8.0	8.9	22
LaVeta Pass *	5M1	2/25	27	6.6	7.0	8.4	23
Four Mile Park	6 <b>K</b> 7	2/28	17	3.6	2.4	3.7	22
Fremont Pass	6 <b>K</b> 8	2/24	34	7.4	14.2	13.2	25
Carfield	6T8	2/28	48	9.9	7.5	-	-
Monarch Pass	614	2/27	57	12.6	12.4	14.9	19
St. Elmo (a)	6 <b>L</b> 5	2/27	46	8.7	9.7	10.5	10
Timberline	6K11	NS			15.3	21.9	10
East Fork	6K17	2/24	20	4.2	7.6	8.5	8
Westcliffe	512	2/27	32	5.1	4.9	5.7	8
Bourbon	5M5	2/23	32	5.2	7.8	6.9	5
Tomichi	6L7	2/27	34	7.2	8.2	-	-
Cooper Hill	6K23	2/27	34	6.4	13.5	-	-
* On adjacent drainage (a) Air observed NS No survey							

This Report Prepared by
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### UPPER RIO GRANDE RIVER WATERSHED IN COLORADO

**as** of MARCH 1, 1961

#### U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

#### SNOW COVER

THE MAIN STEM OF THE RIO GRANDE HAS THE POOREST SNOW COVER IN THE STATE. SOME OF THE ELEVEN COURSES MEASURED IN THIS AREA SHOW ONLY 40% OF THE 15-YEAR AVERAGE. OTHER COURSES ARE SOME HIGHER, BUT THE OVER-ALL AVERAGE IS ONLY 50% OF NORMAL. THE EASTERN SIDE OF THE SAN LUIS VALLEY HAS BETTER PROSPECTS AND HAS A 75% SNOW PACK. THE ALAMOSA AND THE CONEJOS DRAINAGES HAVE SNOW COVER PERCENTAGES OF 67% AND 55%, RESPECTIVELY.

#### SOIL MOISTURE

SOIL MOISTURE IS BETTER IN THE MOUNTAIN AREAS THAN USUAL.
THIS MAY OFF-SET TO SOME EXTENT THE POOR SNOW COVER. VALLEY
AREAS ARE REPORTING FAIR TO POOR SOIL MOISTURE.

#### RESERVOIR STORAGE

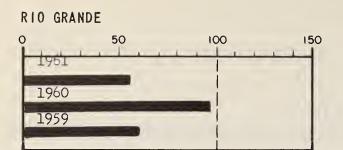
CARRYOVER STORAGE IN THE SIX MAJOR RESERVOIRS ON THIS DRAINAGE IS LESS THAN THAT LAST YEAR AND ONLY 60% OF NORMAL.

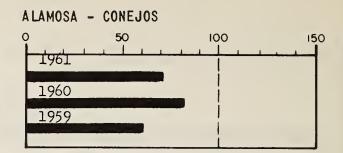
#### STREAMFLOW

RUNOFF IS EXPECTED TO BE BETWEEN 60% AND 70% OF NORMAL. THE TWO REMAINING MONTHS OF THE SNOW SEASON WILL HAVE TO PRODUCE HEAVY SNOW FALL TO INSURE ADEQUATE WATER FOR THIS SUMMER. THIS IS STILL A POSSIBILITY.

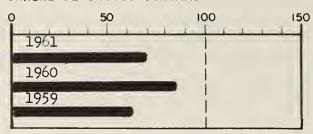
AVERAGE WATER CONTENT IS COMPUTED ON 15-YEAR BASIS (1943-57). ALL YEARS OF RECORD ARE USED WHEN A SNOW COURSE HAS LESS THAN 15 YEARS OF RECORD.

THIS REPORT COMPILED IN COOPERATION WITH COLORADO EXPERIMENT STATION AND STATE ENGINEER OF COLORADO.





#### SANGRE DE CRISTO STREAMS



#### RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIR	USABLE CAPACITY	THIS YEAR	LAST YEAR	AVERAGE
Rio Grande Santa Maria Sanchez Terrace Continental Platoro * 15 year 1943-	45.8 45.0 103.2 17.7 26.7 60.0	6.3 2.7 6.5 2.3 4.4 4.0	12.0 4.0 11.5 6.1 4.1 4.0	11.1 7.5 9.6 2.6 7.3 4.7

MEASURED FIRST OF MONTH

#### PRECIPITATION

STATION	FALL AVE. DEP.		winter DecJan	
Rio Grande (Colo.)	1.07	24	•84	15
*August through Nov	ember			

PRELIMINARY U.S. WEATHER BUREAU DATA AVERAGE OF SELECTED STATIONS

#### SOIL MOISTURE

### STREAMFLOW FORECAST (1,000 A.F.)

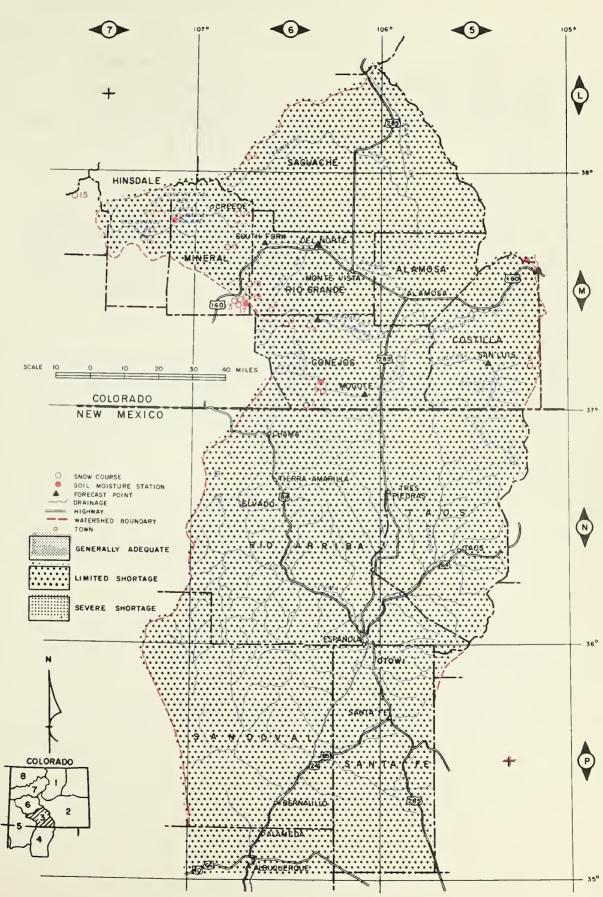
OOTE HOTOTORE								
STATION	CAPACITY	THIS	LAST	AVERAGE				
	(INCHES)	YEAR	YEAR	<del>X</del>				
Bristol View Alberta Park Mogote LaVeta Pass * All past da	7.0	6.7	5.5	3.6				
	9.0	1.1	5.0	3.2				
	7.0	1.8	1.1	1.4				
	8.0	7.2	2.8	3.1				

RAGE ⊁	
.6 .2 .4 .1	South Rio Gr Alamos Cone jo Culebr

STREAM AND STATION	FORECAST	THIS YEAR % AVERAGE	IS YEAR AVERAGE I943-57
South Fork at South Fork	80	66	121
Rio Grande nr Del Norte 1	335	67	491
Alamosa above Terrace	48	68	71
Conejos nr Mogote	135	69	197
Culebra at San Luis 2	16	67	24

- ALL PROFILES 4 FEET DEEP (1) Observed flow plus change in Storage in Santa Maria, Rio Grande, and Continental Reservoir
  - (2) Observed flow plus changes in storage in Sanchez Reservoir.

### UPPER RIO GRANDE RIVER WATERSHED IN COLORADO



SNOW		CURRENT INFORMATION			PAST RECORD		
SNOW COURSE	NO.	DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	WATER CO (INCHE	S)	YEARS OF RECORD
RIO GRANDE in COLORADO							
Wolf Creek Pass	6M1	2/25	42	9.8	27.2	25.4	24
Upper Rio Grande	7M16	2/25	20	4.9	9.0	6.8	23
Santa Maria	7M17	2/25	8	1.4	5.1	4.7	22
Pool Table	5M14	2/23	20	3.8	12.0	5.3	12
Lake Humphreys	6M15	2/25	13	3.4	6.7	6.4	12
Cochetopa Pass	6L6	2/28	24	5.3	5.7	4.8	12
Red Mountain Pass *	7M15	2/28	66	16.4	27.4	25.2	10
Porcupine	7M20	2/26	23	4.1	12.1	9.1	10
Wolf Creek Summit *	7M17	2/25	43	11.3	33.9	23.0	10
Hiway	6M19	2/26	35	8.8	29.3	24.3	5
Pass Creek	6M18	2/25	21	3.4	10.5	11.1	5
ALAMOSA RIVER							
Silver Lakes	6M4	2/24	19	4.2	5.5	6.2	24
Summitville (a)	6M6	2/25	52	10.9	22.0	16.2	19
CONEJOS RIVER							
River Springs	6M5	2/24	17	3.6	4.8	7.4	24
Cumbres Pass (a)	6M7	2/27	40	9.8	26.1	16.8	24
Platoro	6M9	NS			NS	13.0	10
SANGRE DE CRISTO RANGE (Colo)		- 1		, ,			
LaVeta Pass	5M1	2/25	27	6.6	7.0	8.4	23
Culebra	5M3	2/28	32	6.3	9.8	8.7	20
* On adjacent drainage							
(a) Air observed							
NS No survey							
					1		

This Report Prepared by
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Soil Conservation Service
Colorado State University
Ft. Collins, Colorado

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#### RIO GRANDE RIVER WATERSHED IN NEW MEXICO

**as** of MARCH 1, 1961

#### U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

#### SNOW COVER

THE SNOW PACK ON THE HEADWATERS OF THE RIO GRANDE IN COLORADO IS ONLY 50% OF THE 15-YEAR AVERAGE. THE FIFTEEN SNOW COURSES ON THE RIO GRANDE DRAINAGE IN NEW MEXICO INDICATE 83% OF NORMAL FOR THIS MONTH. UPPER AREAS ON THE RIO GRANDE WILL PROBABLY HAVE SOME WATER SHORTAGE THIS SUMMER.

#### SOIL MOISTURE

FALL READINGS OF THE MOUNTAIN SOIL MOISTURE STATIONS INDICATED PRACTICALLY NO SOIL MOISTURE. SINCE THEN SOME SNOW HAS MELTED WHICH TENDS TO IMPROVE THIS CONDITION. VALLEY SOIL MOISTURE IS REPORTED AS POOR TO FAIR.

#### RESERVOIR STORAGE

HOLD OVER STORAGE ON THE RIO GRANDE IS LESS THAN LAST YEAR AND CONSIDERABLY BELOW NORMAL. ELEPHANT BUTTE CONTAINS ONLY 427,700 A.F. COMPARED TO A 15-YEAR AVERAGE OF 606,600 A.F. STORAGE ON THE CANADIAN AND PECOS DRAINAGES IS EXCELLENT. MOST OF THE RESERVOIRS ARE FULL. THIS ASSURES A GOOD WATER SUPPLY TO AREAS BELOW THESE RESERVOIRS.

#### STREAMFLOW

STREAMFLOW IN THE RIO GRANDE BASIN IN NEW MEXICO WILL BE BELOW NORMAL. UNLESS THE NEXT TWO MONTHS PRODUCE MUCH ABOVE NORMAL SNOW FALL. MOST AREAS WILL HAVE A SHORT WATER SUPPLY THIS SUMMER.

AVERAGE WATER CONTENT IS COMPUTED ON 15-YEAR BASIS (1943-57). ALL YEARS OF RECORD ARE USED WHEN A SNOW COURSE HAS LESS THAN 15 YEARS OF RECORD.

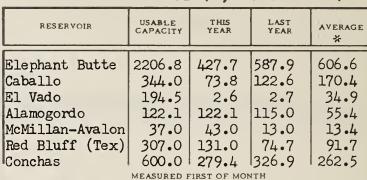
THIS REPORT COMPILED IN COOPERATION WITH COLORADO EXPERIMENT STATION, STATE ENGINEER OF COLORADO AND STATE ENGINEER OF NEW MEXICO.

150

150

150

#### RESERVOIR STORAGE (1,000 AC. FT.)



\* 15 year avg. 1943-57

#### PRECIPITATION

STATION	AVE.	DEP.	win Ave. Dec.	ter DEP. <b>-Jan.</b>
Upper Rio Grande Middle Rio Grande Lower Rio Grande	3.31 U.S. WEA	24 -1.18 88 THER BUR	1.82 EAU DATA	15 19 .71

\*August through November

#### SOIL MOISTURE

	STATION	CAPACITY (INCHES)	THIS YEAR	LAST YEAR	average ★
ĺ	Mogote (Colo)	7.0	1.8	1.1	1.4
	Bristol View (Colo)	7.0	6.7	5.5	3.6
,	Alberta Park (Colo)	9.0	1.1	5.0	3.2
	Chamita (New Mexico)	8.0	1.9	-	2.4
	Bateman	6.7	0.2	-	4.3
	Big Tesuque	3.7	0.7	1.3	2.9
	Taos Canyon	3.3	0.6	0.4	2.8
	Rio En Medio	3.5	0.1	0.5	2.6
	Fenton Hill	6.5	4.3	2.0	-
	Red River	7.8	0.2	0.7	2.3
	Aqua Piedra ALL PR	ofiles 4 F	Zet DEE	0.2	1.7

\* All past data

### 1961 1960

1959

#### LOWED DIO ODINDE

MIDDLE RIO GRANDE

50

RIO CHAMA

1961

1960

1959

1961

1960 1959

UPPER RIO GRANDE

50

50

100

100

100

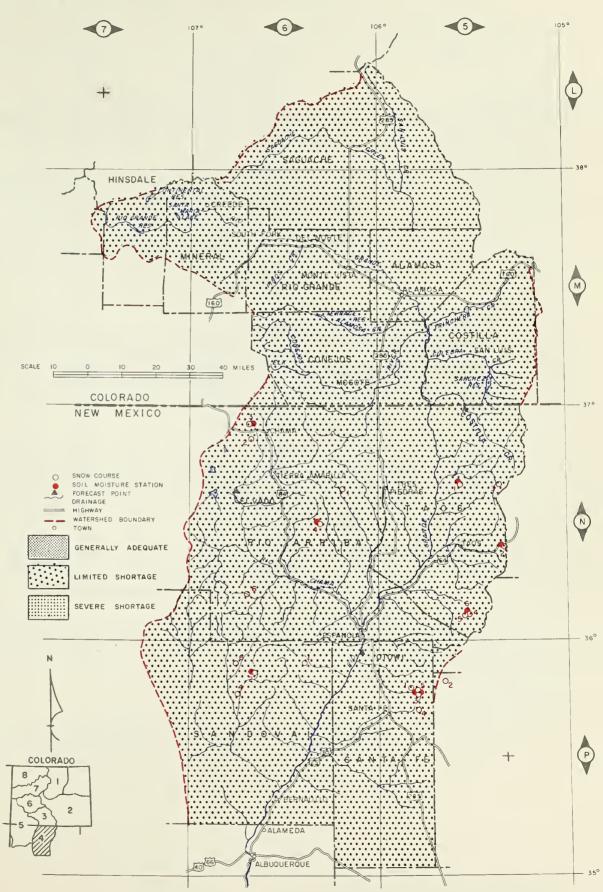
LUWER KIU	GKANDE		
0	50	100	150
1961			
1960			
1959			

#### STREAMFLOW FORECAST (1000 A.F.)

STREAM AND STATION	FORECAST	THIS YEAR % AVERAGE	15 YEAR AVERAGE 1943-57
Rio Chama nr Ia Puenta	140	67	210
Costilla at Costilla	19	70	27
Rio Grande at Otowi (10)	365	58	633
Rio Gr. at San Marcial (10)	190	44	434
Pecos at Pecos	40	83	48

- (10) Observed flow plus changes in storage in Santa Maria, Rio Grande, Continental, Terrace, Sanchez, Platoro and El Vado Reservoirs.
  - \* Rio Grande at Otowi and Rio Grande at San Marcial ave. Mar-July inclusive.

### RIO GRANDE RIVER WATERSHED IN NEW MEXICO



SNOW		CURREN	T INFORMA	TION	PA	ST RECORD	
SNOW COURSE	NO.	DATE OF	SNOW DEPTH	WATER CONTENT	WATER C (INCHE		YEARS OF
		SURVEY	(INCHES)	(INCHES)	LAST YEAR	AVERAGE	RECORD
RIO GRANDE (Colorado)							
Wolf Creek Pass	6M1	2/25	42	9.8	27.2	25.4	24
Upper Rio Grande	7M16	2/25	20	4.9		6.8	23
Santa Maria	7M17	2/25	8	1.4		4.7	22
Pool Table	6M14	2/23	20	3.8		5.3	12
Lake Humphreys	6M15	2/25	13	3.4	6.7	6.4	12
Cochetopa Pass	6L6	2/28	24	5.3	5.7	4.8	12
Porcupine (a)	7M20	2/26	23	4.1	12.1	9.1	10
Wolf Creek Summit	6M17	2/25	43	11.3	33.9	23.0	10
Hiway	6M19	2/26	35	8.8		24.3	5
Pass Creek	6M18	2/25	21	3.4	10.5	11.1	5
Silver Lakes	6M4	2/24	19	4.2		6.2	24
Summitville (a)	6M6	2/25	52	10.9		16.2	19
River Springs	6M5	2/24	17	3.6		7.4	24
Cumbres Pass (a)	6M7	2/25	40	9.8		16.8	24
Platoro	6м9	NS 0./05	077	, ,	NS	13.0	10
LaVeta Pass	5M1	2/25	27	6.6		8.4	23
Culebra (New Maries)	5M3	2/28	32	6.3	9.8	8.7	20
RIO GRANDE (New Mexico)	6Nl	2/25	31	6.2	14.0	8.4	20
Payrole (a) Chama Divide	6N2	2/27	14	3.0		4.4	21
Chamita Chamita	6N2	2/27	30	5.8		9.3	20
Bateman	6N4	2/24	31	7.8		10.1	11
Panchuela	5P2	2/27	14	2.9		3.3	22
Big Tesuque	5P3	2/27	12	2.6	7.0	4.7	19
Rio En Medio	5P5	2/27	29	6.5		6.7	Ιί
Red River	5N1	2/28	24	4.8		6.9	23
Taos Canyon	5N2	2/28	17	3.6		5.5	23
Aspen Grove	5P1	2/24	13	2.4		4.1	24
Hematite Park	5N3	2/28	21	4.9	4.4	5.6	23
Tres Ritos	5N4	2/24	22	5.4	5.9	5.8	23
Cordova (a)	5N5	2/25	39	7.9	14.5	9.5	19
Elk Cabin	5P4	2/27	15	3.8	NS	3.1	13
Quemazon	6P1	2/23	34	9.3	11.7	7.1	11
Fenton Hill	6P2	2/28	19	4.3	6.3	4.2	9

NS No survey

(a) Air observed

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#### DEPARTMENT OF AGRICULTURE

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### SAN MIGUEL - DOLORES - ANIMAS - SAN JUAN WATERSHEDS IN COLORADO & NEW MEXICO

as of MARCH 1, 1961

#### U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

#### SNOW

SNOW COVER IN THIS AREA IS MUCH BELOW NORMAL. ON THE FIRST OF FEBRUARY THE SNOW COVER WAS ONLY ABOUT 50% OF NORMAL. THE MONTH OF FEBRUARY DID NOT HELP THE SITUATION. THE SNOW PACK STILL REMAINS LESS THAN HALF OF THE 15-YEAR AVERAGE. THE DOLORES WATERSHED HAS SLIGHTLY BETTER COVER, BUT FAR FROM GOOD. THE WATER SUPPLY OUTLOOK BECOMES MORE CRITICAL SINCE ONLY TWO MONTHS OF THE SNOW SEASON REMAINS.

#### SOIL MOISTURE

MOUNTAIN SOILS WERE NEAR NORMAL PRIOR TO THE SNOW SEASON. SINCE THEN THERE HAS BEEN SOME MELTING DUE TO THE UNSEASONABLE HIGH TEMPERATURES. THE SOILS IN BOTH MOUNTAIN AND VALLEYS SHOULD BE IN GOOD CONDITION. REPORTS FROM THAT AREA INDICATE THE SOILS IN THE VALLEYS ARE WET DOWN AS MUCH AS SIX FEET IN SOME PLACES.

#### RESERVOIRS

NO REPORT WAS RECEIVED FROM VALLECITO RESERVOIR BUT GROUNDHOG RESERVOIR CONTAINS 4,000 A.F. COMPARED TO 3,200 A.F. LAST YEAR AND A 15-YR AVERAGE OF 7,000 A.F. FOR THIS DATE.

#### STREAMFLOW

THE ANTICIPATED STREAMFLOW IN THIS AREA RANGES FROM 55% OF NORMAL ON THE SAN JUAN TO 75% ON THE DOLORES. ALL OTHER STREAMS ARE BETWEEN THESE LIMITS.

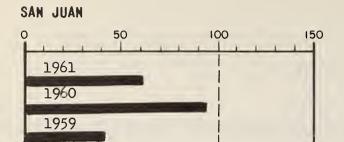
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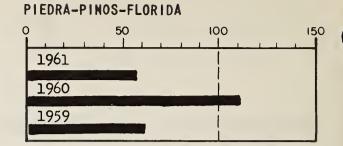
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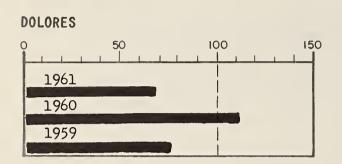
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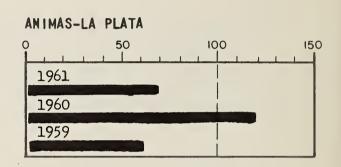
K. W. Chalmers, State Conservationist, R.A. Young, State Conservationist, Colorado J. P. Sexton, Area Conservationist, Monte Vista, Colorado E. A., Nicholson, Area Conservationist \* Grand Junction, Colorado

New Mexico J.B. Christy, Area Conservationist Albuquerque, N.M.









#### RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIR	USABLE CAPACITY	THIS YEAR	LAST YEAR	average *
Groundhog Vallecito	21.7 126.3		3.2	7.0 41.0
* 15 Year Av	g. 1943			

### PRECIPITATION

STATION	FA AVE.	LL 🛠 DEP.	winter Ave. pep DecJan		
Dolores San Juan	4.20 6.92	-1.00 -4.48	3.21 2.36	.03 84	
*August through Nov	ember				

MEASURED FIRST OF MONTH

#### PRELIMINARY U.S. WEATHER BUREAU DATA AVERAGE OF SELECTED STATIONS

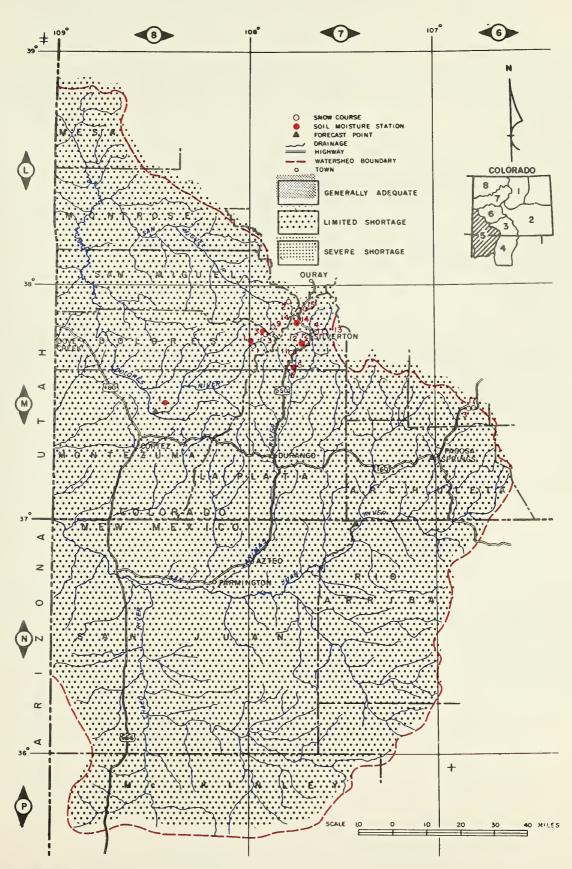
#### SOLL MOISTURE

SOIL MOISTURE							
STATION	CAPACITY (INCHES)	THIS YEAR	LAST YEAR	AVERAGE			
Lizard Head Dolores Rico Mineral Creek Molas Lake Cascade  * All past da	7.0 7.0	4.1 0.7 4.8 4.1 0.9 4.5	5.4 2.5 5.0 5.6 3.2 5.7	  4.8 3.4 5.5			

#### STREAMFLOW FORECAST (1,000 A.F.)

STREAM EON TO	KLOAU	(1)	OO ROI
STREAM AND STATION	FORECAST	THIS YEAR % AVERAGE	15 YEAR AVERAGE 1943-57
San Juan at Rosa, N. M. Los Pinos nr Bayfield* Florida nr Durango Animas at Durango LaPlata at Hesperus Dolores at Dolores Piedra Cr. nr Piedra	320 160 39 325 20 210 103	55 73 63 68 71 75 55	587 220 62 475 28 279 186

# SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVERS WATERSHEDS IN COLORADO & NEW MEXICO



SNOW	CURRE	NT INFORMA	TION	PAST RECORD		
SNOW COURSE NO.	DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	WATER C (INCHE		YEARS OF RECORD
SAN JUAN RIVER Wolf Creek Pass* Upper San Juan Wolf Creek Summit Chama Divide* Chamita* ANIMAS RIVER Silverton Sub-Station Ironton Park* Cascade Spud Mountain Molas Lake Howardville Mineral Creek Red Mountain Pass DOLORES RIVER Rico Telluride Lizard Head Trout Lake  * Adjacent drainage NS No survey  6M1 6M3 6M17 6M2 6M2 6M3 7M4 7M6 7M5 7M1 7M6 7M5 7M1 7M1 7M1 7M1 7M1 7M1 7M1 7M2 7M1 7M2 7M3 7M9	2/25 2/25 2/25 2/27 2/27 2/28 2/28 2/28 2/28 2/28 2/28	42 48 43 14 30 12 36 29 50 26 28 32 66 19 25 32 33	9.8 11.8 11.3 3.0 5.8 2.5 8.8 5.5 10.8 5.1 5.9 6.0 16.4 6.0 4.5 8.0 6.4	27.2 30.1 33.9 6.1 8.5 7.4 11.6 11.8 21.8 10.2 NS 13.7 27.4 7.8 5.3 12.3 13.0	25.4 27.6 23.0 4.4 9.3 5.1 10.3 11.3 21.4 12.6 9.7 13.1 25.2 7.9 6.7 13.2 11.6	24 23 10 21 20 20 22 22 10 10 8 10 10 21 22 19 12

This Report Prepared by
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Colorado State University
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### GUNNISON RIVER WATERSHED IN COLORADO

**as of** MARCH 1, 1961

#### U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

#### SNOW

THE SNOW PACK IN THIS AREA REMAINS ABOUT THE SAME AS LAST MONTH. SNOW ON THE UNCOMPANGRE RIVER IS SLIGHTLY BETTER THAN ON THE MAIN STEM OF THE GUNNISON RIVER, BUT IT IS ONLY 65% OF THE 15-YR. AVERAGE. SNOW AT THE LOWER ELEVATIONS IS NOT TOO BAD, BUT AT HIGHER ELEVATIONS THE SNOW PACK IS CRITICAL. THIS COULD INDICATE A SHORT AND EARLY RUNOFF. THE TWO REMAINING MONTHS OF SNOW SEASON MUST BE FAR ABOVE NORMAL TO INSURE ADEQUATE WATER FOR THE VALLEY AREAS THIS SUMMER.

#### SOIL MOISTURE

SOIL MOISTURE REMAINS POOR AT HIGH AND LOW ELEVATIONS. SOIL MOISTURE STATIONS INDICATE PRACTICALLY NO MOISTURE IN THE SOIL EXCEPT IN THE VICINITY OF MOLAS PASS. REPORTS RECEIVED FROM THE VALLEY AREAS INDICATE SOIL MOISTURE IS POOR EXCEPT AROUND MONTROSE WHERE GOOD SOIL MOISTURE IS REPORTED.

#### RESERVOIR STORAGE

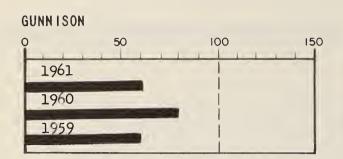
TAYLOR PARK RESERVOIR CONTAINS 31,100 A.F. AT THIS DATE COMPARED TO 46,200 A.F. LAST YEAR AND 60,900 A.F. AVERAGE.

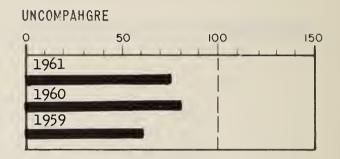
#### STREAMFLOW

STREAMFLOW IN THIS AREA WILL BE ABOUT 65% OF NORMAL. THE UNCOMPANGRE RIVER IS EXPECTED TO FLOW NEARLY 75% OF NORMAL, WHILE THE MAIN STEM OF THE GUNNISON WILL PROBABLY ONLY FLOW 61% OF THE 15-YR AVERAGE.

AVERAGE WATER CONTENT IS COMPUTED ON 15-YEAR BASIS (1943-57). ALL YEARS OF RECORD ARE USED WHEN A SNOW COURSE HAS LESS THAN 15 YEARS OF RECORD.

THIS REPORT COMPILED IN COOPERATION WITH COLORADO EXPERIMENT STATION AND STATE ENGINEER OF COLORADO.





#### RESERVOIR STORAGE (1,000 AC. FT.)

#### PRECIPITATION

RESERVOIR	USABLE CAPACITY	THIS YEAR	LAST YEAR	average	STATION	AVE.	ALL <b>≭</b> DEP.	WIN AVE.	TER DEP.
Taylor	106.2	31.1	46.2	60.9	Gunnison	3.52	-1.10	1.23	-1.15
*15 yr. avera	ge 194	3-57			*August through Nov	ember			
	ļ				PRELIMINARY U.S	S. WEATHE	ER BUREAU	DATA	

MEASURED FIRST OF MONTH

PRELIMINARY U.S. WEATHER BUREAU DAT AVERAGE OF SELECTED STATIONS

#### SOIL MOISTURE

#### STREAMFLOW FORECAST (1000 A.F.)

STATION	CAPACITY (INCHES)	THIS YEAR	LAST YEAR	average ⊁	STREAM AND STATION	FORECAST	THIS YEAR % AVERAGE	I5 YEAR AVERAGE I943-57
Mineral Creek Placita Maroon King	7.0 8.0 8.0 8.0	4.1 0.1 0.1	5.6 2.4 4.8 5.9	4.8 1.5 1.8 6.1	Gunnison nr. Grand Jct. Uncompahgre at Colona Surface Cr. at Cedaredge	845 112 11	61 77 61	1386 145 18
* All past da	ta							

### **GUNNISON RIVER WATERSHED IN COLORADO**



SNOW		CURRE	NT INFORMA	TION	PA	ST RECORD	
SNOW COURSE	NO.	DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	WATER CONTINUE (INCHE		YEARS OF RECORD
GUNNISON RIVER Crested Butte Park Cone Alexander Lake (a) Mesa Lakes * Porphyry Creek Monarch Pass * North Lost Trail * (a) Trickle Divide * (a) Park Reservoir (a) Cochetopa Pass McClure Pass (a) Mineral Creek * Lake City Tomichi Blue Mesa Keystone Long Draw UNCOMPAHGRE RIVER	6L1 6L2 7K3 7K4 6L3 6L4 7K1 7K5 7K6 6L6 7K8 7M14 7M8 6L7 7L2 7L3 7L4	2/28 2/27 2/27 2/25 2/28 2/27 2/27 2/27 2/27 2/27 2/27 2/28 2/25 2/28 2/25 2/27 2/27 Est.	36 31 30 32 52 57 38 47 36 24 32 33 22 34 25 38 25	6.4 4.4 7.2 7.1 11.8 12.6 7.1 12.2 9.9 5.3 8.6 6.0 5.5 7.2 4.0 7.6 4.5	4.8 7.8 16.9 14.5 12.4 9.8 18.9 18.1 5.7 14.1 13.7 8.1 8.2 5.5	12.6 9.4 17.6 13.2 13.5 14.9 12.8 22.2 20.9 4.8 15.3 13.1 8.0	25 24 23 24 20 19 24 20 20 12 11 10 12 -
Ironton Park Telluride Lizard Head Trout Lake Red Mountain Pass *  NS - No Survey (a) Air Observed * On adjacent drainage	7M6 7M2 7M3 7M9 7M15	2/27 2/27 2/27 2/27 2/28	36 25 32 33 66	8.8 4.5 8.0 6.4 16.4	11.6 5.3 12.3 13.0 27.4	10.3 6.7 13.2 11.6 25.2	22 22 19 12 10

This Report Prepared by
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#### DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Snow Survey Colorado State University Ft. Collins, Colorado

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### COLORADO RIVER WATERSHED IN COLORADO

**as** of MARCH 1, 1961

#### U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

#### SNOW COVER

THE PROSPECTS FOR AN ADEQUATE WATER SUPPLY THIS SUMMER ARE DIMMING. WITH ONLY TWO MONTHS OF SNOW SEASON LEFT, THE SNOW PACK IS ONLY 55% OF NORMAL ON THE MAIN STEM OF THE COLORADO AND 50% OF NORMAL ON BOTH THE ROARING FORK AND PLATEAU CREEKS. THE REMAINING MONTHS OF SNOW WILL HAVE TO BE MUCH ABOVE NORMAL TO EVEN BRING THE SNOW PACK UP TO THE 15-YR. AVERAGE.

#### SOIL MOISTURE

THE FALL READINGS OF SOIL MOISTURE STATIONS INDICATED PRACTICALLY NO MOISTURE IN THE SOILS, HOWEVER, THE UNSEASONABLY HIGH TEMPERATURES HAVE MELTED SOME OF THE LOW SNOW. THIS COULD HAVE INCREASED THE SOIL MOISTURE IN SOME AREAS. MOST VALLEY AREAS ARE STILL REPORTING POOR TO FAIR SOIL MOISTURE CONDITIONS.

#### RESERVOTR STORAGE

STORAGE IN GRANBY IS SLIGHTLY BETTER THAN LAST YEAR AND GREEN MOUNTAIN RESERVOIR CONTAINS 65,000 A.F. COMPARED TO 71,400 A.F. LAST YEAR AND A 15-YR NORMAL OF 68,000 A.F.

#### STREAMFLOW

THE STREAMFLOW ON THE MAIN STEM OF THE COLORADO RANGES FROM 76% OF NORMAL AT GRANBY TO 57% OF NORMAL ON WILLOW CREEK. THE TRIBUTARY STREAMS AS A RULE ARE BEING FORECAST LESS THAN THE MAIN STEM. THE WATER SUPPLY OUTLOOK FOR THIS REGION IS NOT GOOD.

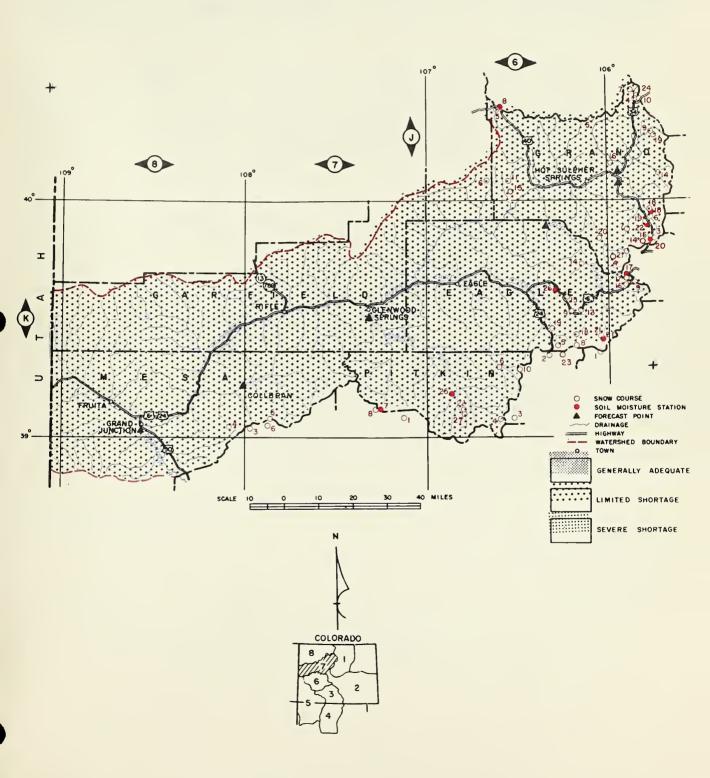
AVERAGE WATER CONTENT IS COMPUTED ON 15-YEAR BASIS (1943-57). ALL YEARS OF RECORD ARE USED WHEN A SNOW COURSE HAS LESS THAN 15 YEARS OF RECORD.

THIS REPORT COMPILED IN COOPERATION WITH COLORADO EXPERIMENT STATION AND STATE ENGINEER OF COLORADO.

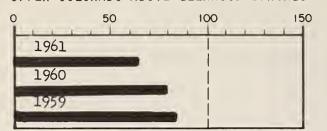
SNOW		CURRE	NT INFORMA	TION	PA	ST RECORD	
		DATE	SNOW	WATER	WATER CO		YEARS
SNOW COURSE	NO.	OF SURVEY	DEPTH (INCHES)	(INCHES)	LAST YEAR	AVERAGE	OF RECORD
					I		**
COLORADO RIVER (UPPER)							
Phantom Valley	5J4	2/27	26	4.5	7.3	8.9	25
Hoosier Pass	6Kl	2/27	36	7.0	11.1	10.0	23
Berthoud Pass	5K3	2/24	37	7.9	12.7	11.5	25
Tennessee Pass	6K2	2/28	28	4.8	9.1	7.9	25
M. Fork Camp Ground	5K4	2/24	28	5.4	7.0	8.0	24
Fiddlers Gulch	6K5	NS			15.0	13.6	23
Lulu	5J7	2/27	41	8.8	15.3	13.9	23
Willow Creek Pass	6 <b>J</b> 5	2/24	30	6.3	10.0	10.8	23
North Inlet Grand Lake	5J9	NS			5.5	8.0	21
Lake Irene	5J10	Est.	46	8.6	NS	18.6	22
Arrow	5K6	2/27	33	5.6	8.7	9.0	23
Iapland	5K7	2/28	29	4.2	5.9	10.3	21
Fremont Pass	6K8	2/24	34	7.4	14.2	13.2	25
Lynx Pass	6K6	2/24	27	5.5	8.0	10.6	25
Shrine Pass	6K9	2/24	35	7.7	14.8	14.0	19
Grizzly Peak	5K9	2/23	35	7.3	14.9	14.9	19
Glen Mar Ranch	6K20	2/24	25	4.6	6.2	7.2	14
Monarch Lake	5J14	2/26	29	5.8	9.0	11.0	13
Granby	5J16		13	2.8	4.9	6.2	12
Grand Lake	5J19	2/27	24	4.8	5.0	7.2	12
Berthoud Summit	5K14	2/28	46	10.7	16.1	16.1	10
Gore Pass	6J11		20	3.9	5.5	8.9	10
Frisco	6K13	2/24	15	2.7	4.3	7.6	10
Snake River	5K16	2/23	15	3.0	4.4	8.1	10
Summit Ranch	6K14	Est.	23	5.6	NS	7.7	5
Vail Pass	6K15	2/24	30	6.6	11.2	15.9	8
Pando	6K19	2/24	20	4.4	6.1	9.2	8
Kokomo	6K18	2/25	28	5.8	10.0	10.8	8
Milner Pass	5J24	NS			NS	-	8
Blue River	6K21	2/27	22	3.7	6.8	-	4
Jones Pass	5K21	2/24	37	6.8	11.8	-	4
Ranch Creek	5K18		25	4.6	5.4	-	4
Vasquez Creek	5K19	2/27	31	5.5	9.7	-	4
Cooper Hill	6K23	2/27	34	6.4	13.5	-	1
ROARING FORK RIVER		4 .					
Independence Pass Tunnel	6K4	2/26	34	6.8	13.1	14.3	24
North Lost Trail A	7Kl	2/27	38	7.1	9.8	12.8	24
Nast	6K6	2/27	17	2.0	NS	6.0	22
Ivanhoe	6K10		38	5.9	10.6	15.6	14
McClure Pass A	7K8	2/27	32	8.6	14.1	15.3	11
Lift	7K27	2/23	50	10.6	10.2	-	3
Aspen	7K22	2/23	34	6.8	17.4	-	-
PLATEAU CREEK		,					
Mesa Lakes	7K4	2/25	32	7.1	14.9	13.2	24
Trickle Divide A	7K5	2/27	47	12.2	18.9	22.2	20
Alexander * A	7K3	2/27	30	7.2	16.9	17.6	23
Park Reservoir * A	7 <b>K</b> 6	2/27	36	9.9	18.1	20.9	20
*On adjacent drainage							
A - Air Observed							
Courses with less than 15 year			period 1	4943-57	1		1
have all years prior to 1957	averag	ged.					

NS No Survey

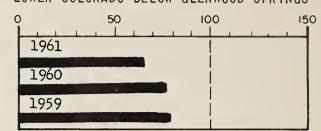
### COLORADO RIVER WATERSHED IN COLORADO



#### UPPER COLORADO ABOVE GLENWOOD SPRINGS



#### LOWER COLORADO BELOW GLENWOOD SPRINGS



#### RESERVOIR STORAGE (1,000 AC. FT.)

RESERVOIR	USABLE	THIS	LAST	average
	CAPACITY	YEAR	YEAR	*÷
Granby ** Green Mt. * 1943-57	465.5 146.9	247.5 65.0	231.2 71.4	213.3 68.0

\*\* Less than 15 years of MONTH

#### PRECIPITATION

STATION	FA AVE.	DEP.	winter ave. dep. DecJan.		
Upper Colorado	3.72	-1.24	1.45	-1.36	
Lower Colorado	3.52	65		-1.44	

PRELIMINARY U.S. WEATHER BUREAU DATA AVERAGE OF SELECTED STATIONS

#### SOIL MOISTURE

STATION	CAPACITY (INCHES)	THIS YEAR	LAST YEAR	AVERAGE ☆
Muddy Pass Gore	8.0	0.6	5.0 2.1	2.0
Berthoud Pass	8.0	5.4 5.4	1.0	2.6
Vasquez Ranch Creek	7.0	3.9	5.7	4.2
Vail Pass Blue River	7.0	0.2 1.3	5.2 4.4	2.2
Placita Maroon	8.0	0.1	2.4	1.5
* All meet de				

All past data
ALL PROFILES 4 FEET DEEP

STREAMFLOW FORECAST (1000 A.F.)

STREAM AND STATION	FORECAS	T Y	HIS EAR % RAGE	15 YEAR AVERAGE 1943-57
Blue R.abv. Green Mt. Dam Colo. R. nr. Granby (4) Colo. R. at Glenwood Spgs Roaring Fork at Gl. Spgs(	(5) 11 6) 5	00	59 76 71 62 61	290 235 1546 803
Plateau nr. Collbran Williams Fk. nr Parshall Willow nr Granby		35 45 25	58 57	57 78 44

- (4) Observed flow plus diversions by Adams tunnel and Grand River ditch plus change in storage in Granby Reservoir.
- (5) Observed flow plus the changes as indicated in (4) plus Moffat Ditch.
- (6) Observed flow plus diversion through Twin Lakes tunnel.

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### YAMPA, WHITE, & NORTH PLATTE RIVERS WATERSHEDS IN COLORADO

**as** of MARCH 1, 1961

#### U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

#### SNOW COVER

SNOW PACK IN THIS AREA REMAINS DEFICIENT. SNOW FALL DURING THE MONTH OF FEBRUARY WAS BELOW NORMAL AS WAS THE PRIOR MONTH. NORTH PLATTE DRAINAGE HAS ABOUT 67% OF AVERAGE, YAMPA 63% AND THE WHITE A LITTLE BETTER WITH 68%. ONLY TWO MONTHS REMAIN OF THE USUAL SNOW SEASON. SNOW FALL WILL HAVE TO BE EXTREMELY HEAVY THE REMAINDER OF THE SEASON TO INSURE ADEQUATE WATER THIS SUMMER.

#### SOIL MOISTURE

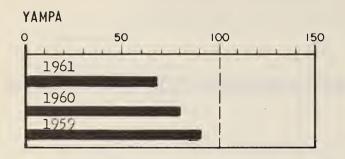
SOIL MOISTURE READINGS WERE NOT TAKEN THIS MONTH, BUT IT IS ANTICIPATED THAT THE MOISTURE COULD BE BETTER THAN THAT INDICATED IN THE FALL. TEMPERATURES HAVE BEEN MUCH HIGHER THAN NORMAL. SOME OF THE LOW ELEVATION SNOW HAS MELTED. THIS WILL IMPROVE SOIL MOISTURE CONDITIONS. REPORTS FROM THIS AREA INDICATE THE VALLEY SOILS ARE STILL DRY.

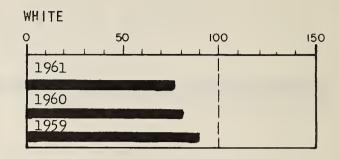
#### STREAMFLOW

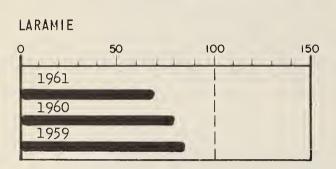
STREAMFLOW RANGES FROM 61% OF NORMAL ON THE LITTLE SNAKE TO 79% ON THE ELK RIVER. SHORTAGES WILL EXIST IN THE LOWER REACHES OF ALL THE STREAMS IN THIS AREA. THE WHITE RIVER AT MEEKER IS FORECAST AT 250,000 A.F. WHICH IS 75% OF THE 15-YR. AVERAGE.

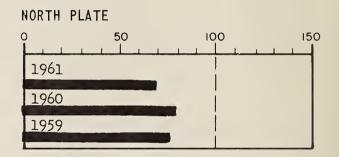
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THIS REPORT COMPILED IN COOPERATION WITH COLORADO EXPERIMENT STATION AND STATE ENGINEER OF COLORADO.









#### SOIL MOISTURE

#### STREAMFLOW FORECAST (1,000 A.F.)

STATION	CAPACITY	THIS	LAST	AVERAGE
	(INCHES)	YEAR	YEAR	
Muddy Pass Willow Pass Two Mile Laramie Road Hahn's Peak  * All past ye	8.0 7.0 8.0 7.0 8.0	0.6 1.1 0.5 0.8 5.9	5.0 7.0 5.0 5.3	2.0 3.4 3.0 2.2

STREAM AND STATION	FORECAST	THIS YEAR % AVERAGE	15 YEAR AVERAGE 1943-57
Laramie at Jelm Elk at Clark Yampa at Steamboat Spgs. White at Meeker North Platte at Northgate Little Snake at Lilly	65	58	113
	170	79	215
	205	69	283
	250	75	335
	120	47	255
	215	61	350

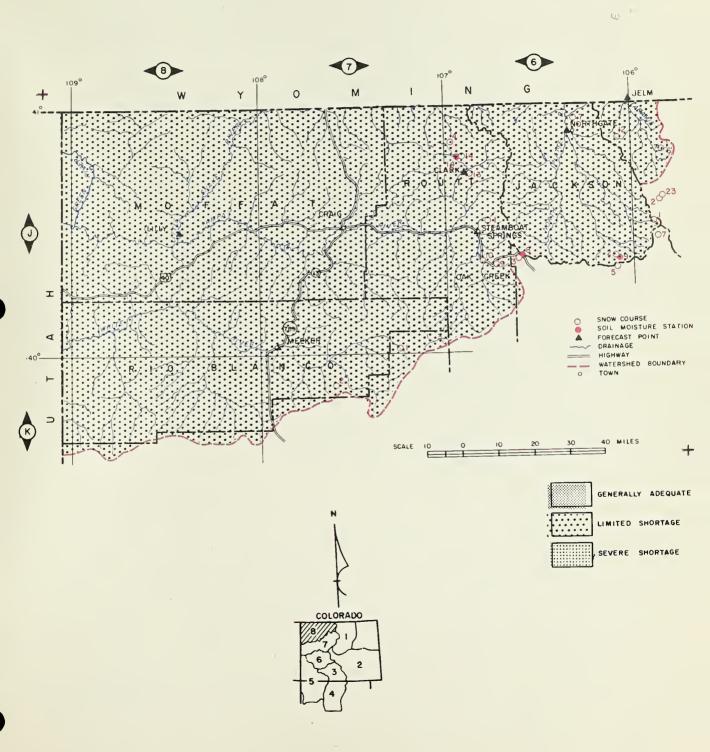
ALL PROFILES 4 FEET DEEP

#### PRECIPITATION

STATION	AVE.	DEP.	winter DecJan.		
Yampa White North Platte	5.12 4.64 3.20	48 -1.76 24	1.65	-1.97 -1.56	

PRELIMINARY U.S. WEATHER BUREAU DATA
AVERAGE OF SELECTED STATIONS
\* August through November

# YAMPA, WHITE, & NORTH PLATTE RIVERS WATERSHEDS IN COLORADO



SNOW		CURRENT INFORMATION			PAST RECORD		
SNOW COURSE	NO.	DATE OF	SNOW DEPTH	WATER	WATER CONTENT (INCHES)		YEARS OF
		SURVEY	(INCHES)	(INCHES)	LAST YEAR	AVERAGE	RECORD
NORTH PLATTE RIVER							
Cameron Pass (a)	5J1	2/27	63	14.8	18.0	18.0	24
Park View	6J2	2/27	24	4.6	7.5	7.7	25
Columbine Lodge	6J3	2/24	49	12.2	16.4	19.6	25
Deadman Hill * (a)	5J6	NS			14.0	12.2	24
Willow Creek Pass *	6J5	2/24	30	6.3	10.0	10.8	23
Roach * (a)	6J12	2/27	39	9.0	NS	15.7	19
Northgate	6J7	2/24	19	3.3	4.5	5.4	11
McIntyre *	5J15	NS			NS	9.8	11
YAMPA RIVER							
Dry Lake (a)	6J1	2/27	55	11.3	16.2	17.1	22
Columbine Lodge *	6J3	2/24	49	12.2	16.4	19.6	25
Elk River (a)	6J4	2/27	40	9.6	12.4	15.1	21
Lynx Pass *	616	2/24	27	5.5	8.0	10.6	25
Rabbit Ears	6J9	2/24	62	14.5	NS	22.0	7
Yampa View	6J10	2/24	37	8.3	11.1	13.6	9
Bear River	7J3	NS		,	NS		
Clark (a)	6J13	2/27	31	6.2	7.6	12.8	5
Hahn's Peak	6J14	NS			-		-
WHITE RIVER	GYFO	2 /25			1 ,, ,	7. /	
Burro Mountain (a)	7K2	2/27	45	10.9	13.0	14.6	24
Rio Blanco	7J1	2/27	33	7.8	13.1	13.1	22
V 0 115 4 105 505	91.0						
* On adjacent drainage							
(a) Air observed							
NS No survey							

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